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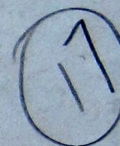
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# 4.7-INCH Q.F. GUN

(Heavy Batteries).

GUN DRILL.



1916.

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## 4.7-inch Q.F. GUN.

## GENERAL INSTRUCTIONS.

Preliminary instruction in the equipment should be given practically to each recruit before any attempt is made to instruct him in Section Gun Drill.

As soon as he is conversant with all parts of the equipment, and can handle in the best and quickest manner each of the working parts of the gun, instruction in Section Gun Drill should be commenced.

This instruction should take the form of practical demonstrations dealing with the work of each man of the detachment, and all men under instruction should, in turn, carry out the work of each particular number in the detachment.

Once the work of each number has been thoroughly mastered, it should not take long for the recruit to learn the actual drill.

It is most important that a marked distinction should be drawn between *instruction* and *drill*.

During the former the language used should be as simple as possible, and the meaning of all technical terms which are necessary must be carefully explained. A conversational tone should be adopted, and under no circumstances whatever must anything in the nature of long-winded quotations from drill books, &c., be allowed. The men should be permitted to assume an easy attitude and their interest should not be allowed to flag. They should be encouraged in the fullest possible degree to ask questions.

At drill, on the contrary, the most rigid discipline must be maintained, orders must be clear, decisive, and emphatic, and the detachments made to work steadily, smartly, and rapidly. At the same time, the utmost accuracy is essential, and any deviation from the methods laid down must be at once strictly checked.

The following instructions are arranged so that all work carried out by each individual member of a detachment is grouped together. Those paragraphs marked with an asterisk should not, however, be taught until the drill has been learnt.

## DETAILED INSTRUCTIONS FOR GUN DETACHMENTS.

The detachment consists of 10 men, 8 of whom work in the firing battery, the remainder forming a reserve.

The duties of each particular number are as follows :—



## No. 1.

1. Before leaving the gun park he must satisfy himself that the equipment of his sub-section is complete in every respect—reporting the fact to his section commander.

2. He must examine the buffer and see that it is properly filled. To do so he should place the cradle at maximum depression. He will then remove the filling hole plug and see that oil shows in the hole. He must be careful to ascertain that oil is not leaking through the packing. A leakage may be detected by oil dripping from the buffer at the gland.

A leakage of oil is liable to cause a serious accident to the equipment during firing. If the buffer leaks at the gland, and tightening the gland does not stop the leak, the packing must be renewed.

Instructions for filling the buffer are shown on a metal plate on the right spring case.

3. He must be careful to see that the elevating gear is in good order, and that the friction rings are tightened just sufficiently to admit of the necessary "slip" for preventing injury to the gear.

4. He should see that the various oil holes in the breech mechanism and carriage are kept supplied with oil, and that the guides on the gun are kept free from grit and burrs, and slightly oiled.

5. He must see that the running out springs and rods are kept lubricated with mineral jelly.

6. He only gives the words of command shown for him in Section Gun Drill. His executive orders should be no louder than is necessary for his sub-section to hear, but when assisting to pass orders down the battery, they should be given out sufficiently loud to ensure them getting through.

7. He must acknowledge all orders affecting his sub-section by saluting, also any orders that he may be required to pass down the battery. The salute must be given accurately and unmistakably, so that it may be plainly seen.

\*8. He is responsible that the most suitable ground available is selected for his gun. It is of the greatest importance that this gun should have a firm and level platform. When in action on a side slope the higher wheel should be dug in, if time and ground admit, to assist in steadying the carriage. The hole should be dug in front, or in rear, of the higher wheel, and the gun run into it.

The trail must have a firm bearing on the ground.

\*9. If the gun is in action on a forward slope or a high angle of elevation is required it will often be necessary to dig a trench for the trail. The front edge should be sloped to prevent the trail resting on it and the rear edge lined with a row of sand-

bags. When not required it can be filled in with empty shell boxes filled with earth or broken brick to give a level platform for the trail.

\*10. In order to find the highest elevation at which the gun can be fired without digging in the trail, set the field clinometer to the angle of sight ordered (zero if none has been ordered) and place it on the clinometer plane of the rocking bar sight. Then elevate the gun as much as possible by the elevating hand-wheel. The bubble of the field clinometer is then levelled by turning the handle of the sight, and the yard scale will show the greatest elevation at which the gun can be fired without digging in the trail. This should be done at the first opportunity after the gun is in action.

11. When a switch is ordered, he will measure the switch angle with his hand, pick up some object in the new line and direct the gun on to it, laying for direction by looking along the top of one of the spring cases. The aiming point or target should then be in the field of view of the sighting telescope.

12. When his gun is in action under cover, or in the open, he must ascertain as soon as possible the aiming point or auxiliary aiming point used by the layer; also when in the open the target or reference point.

13. As soon as the gun is fired it should be relaid. He should have this done without waiting for orders.

14. When 7 or 8 brings up the shell he steps up to him and, after checking the setting if a "time" shell, removes the safety arrangement from the fuze.

With the No. 1 D.A. fuze he removes the cap.

In the case of a No. 17 or No. 44 D.A. fuze he removes the pin and cap.

With the No. 100 percussion fuze there are no safety arrangements to remove.

With the No. 54, 65 or 65A T. and P. fuze, if a "percussion" shell, he removes the lower "percussion" pin. If a "time" shell he removes both pins.

With the No. 80 T. and P. fuze, if a "percussion" fuze, he notes if the fuze is set at "safety." There are no safety arrangements to be removed with this fuze.

With the No. 83 T. and P. fuze, if a "percussion" shell, he notes if the fuze is set at "safety." If a "time" shell, he removes the safety pin.

15. In the case of a missfire, or if a new firing pin has been inserted in the striker, it may be necessary to gauge the protrusion of the striker. The procedure is as follows:—

Open the breech, press in the catch retaining breech screw, and turn the breech to the closed position, apply the "gauge striker protrusion" to the front face of the breech screw. In



the event of the protrusion not being within the limits of .09 and .11 of an inch the striker must be adjusted or the firing pin exchanged.

16. He must keep a record of the angles to the aiming point and auxiliary aiming point, and also of the correction for difference in level of wheels.

\*17. To correct for difference in level of wheels, place the field, or Watkin, clinometer across the clinometer plane on the breech of the gun and level the bubble. The reading in degrees multiplied by the number of degrees in the angle of elevation will give the number of minutes' deflection to be given to the side of the higher wheel. (See F.A.T., Sec. 119.) The degrees of elevation should be obtained from the toothed arc of the rocking bar sight. When a switch is made to a target at a different range, 1 must bear in mind the amount of deflection already on the sight for difference in level of wheels when making his calculation.

\*18. As the wheels tend to sink and the spade, after a very few rounds, becomes useless to check the recoil, every endeavour must be made to quickly improvise some sort of platform for the wheels and some arrangement for checking the recoil.

Broken brick, stones, &c., do well under the wheels, and in very soft ground green brushwood used in conjunction with the broken brick, &c., will prevent the wheels sinking. If broken brick, &c., is available 9 and 10 should shovel some round the lowest part of each wheel after every round. When the wheels lift on shock of discharge, the broken brick, &c., will fall into the wheel tracks and become beaten down. A ramp of 5 sand-bags behind each wheel will check the recoil.

If material is at hand and time allows, a baulk for the trail to butt against will also assist.

During any cessation of fire the platform for the wheels should be levelled by laying down broken brick, &c., under the lower wheel.

The carriage should be allowed to recoil unchecked for 4 to 6 inches before any attempt is made to check the recoil, otherwise irregular shooting may result.

NOTE.—Paras. 8, 9 and 18 are written as a guide as to what can be quickly improvised in moving warfare, and do not refer to the more elaborate platforms and anchorages used in trench warfare.

## No. 2.

1. He is responsible that the brakes are always put on when firing. He puts them on as soon as laying for direction is completed. He also puts on the brake on the near side when

travelling. To put on the brake he turns the hand-wheel to the right. RIGHT—TIGHT; LEFT—LOOSE. When putting on the brakes either for travelling or firing, great care should be taken that the brakes are not put on too hard.

2. He attends to the spade when used, lowering it on coming into action and raising it at "Cease Firing."

To lower the spade he removes the "key securing" and raises the handle. To raise the spade he should lean forward over the brake arm and, assisted by 5, should lift the spade until the catch engages. He then keys up. If the spade is buried 2 and 5 should lever it out of the ground with handspikes placed over the spokes of the wheels.

3. He opens and closes the breech as follows:—

To open the breech:—He takes hold of the lever with his right hand and draws it towards him as far as it will go.

To close the breech:—He takes hold of the lever with his right hand and pushes it from him as far as it will go.

4. After closing the breech he should open it sufficiently to allow 5 to insert a tube in the adapter (taking care not to open the breech so far as to work the extractor); he should then close the breech carefully. He must see that 5 has his right hand well clear before he closes the breech.

5. When the gun is ready to fire and 1 gives the caution, 2 cocks the striker, steps outside the wheel and faces the breech, holding the lanyard in his right hand. 1 then orders "Fire" and 2 fires the gun by jerking the lanyard smartly; as soon as the gun is fired he unhooks the lanyard and places it round his neck.

6. He extracts empty cartridges after firing. To do this he should use the hand extractor, points of the hook downwards, holding it with the left hand and throwing the empty cartridge well to the rear.

7. He traverses with his handspike on the right side. The handspike should be held with the bevel portion downwards and placed under the trail in such a way as to move it the amount required.

8. He should carefully examine the striker whenever he opens the breech. With some marks of tubes, a small brass disc is sometimes blown back on to the end of the striker. This, if not removed, may cause the gun to fire prematurely.

## No. 3.

1. He attends to the brake on the off-side when travelling. See para. 1, 2's duties.

2. At "Preparation for Action" he examines the No. 1 dial sight by actually placing it on the gun. The scale should be set to zero.



The range drum of the rocking bar sight should be set to 6,000 yards and the deflection scale to zero.

3. When in action his normal position will be in rear of the combined No. 1 dial rocking bar sight, with his right hand free to set the range drum. He must remember that to set the range drum he must turn the handle to the right (clockwise) to give elevation. **RIGHT—RAISE.**

4. When setting the combined No. 1 dial-rocking bar sight the degrees are put on the dial and minutes on the deflection scale.

5. When fixing the telescope on the bar of the combined No. 1 dial-rocking bar sight, he should see that the clamps are in the proper position.

When fixing the dial sight, whether on the bar or on the pillar, he should see that it is in the correct position and secured by its pin.

6. When using the open sights or the old pattern No. 1 dial sight, he must keep his eye about 12 inches from the backsight.

7. When setting right deflection on the leaf of the rocking bar sight he turns the "right" milled head with his right hand away from himself, and for "left" deflection he turns the "left" milled head towards himself. **RIGHT—AWAY.**

#### No. 4.

1. His normal position in action is in rear of the left gun wheel close to the elevating hand-wheel, holding the field clinometer in his hand ready to put on the angle of sight.

2. He must remember that to give elevation he must turn the elevating hand-wheel to the rear. **REAR—RAISE.** One complete turn of the elevating gear gives one degree elevation or depression. When laying the gun the last motion must be one of depression.

3. He sets the field clinometer at the angle of sight ordered and must remember that, for elevation, the graduated arc should be to the rear, and *vice versa* for depression. When setting the level at fractions of a degree, it should be moved along the radial arm until the arrow comes opposite the number of minutes ordered; the clamping nut at the bottom of the level should then be tightened.

4. At "indirect" laying he puts the angle of sight on the field clinometer, and lays for elevation.

At "direct" laying he levels the field clinometer as soon as possible.

5. As soon as the gun is fired he depresses it, if necessary, to the proper position for loading. This should not exceed 5 degrees elevation.

6. He plants aiming posts, when used, as directed by 3, bringing them in on the order "*Cease firing.*"

7. He removes the field clinometer from the rocking bar sight plane before he steps clear at "Ready" from 3.

8. See para. 17—1's duties.

9. See para. 16—5's duties.

#### Nos. 3 and 4.

1. The quick and accurate laying of the gun is most important. This can only be assured if there is a good mutual understanding between 3 and 4 and the traversing numbers 2 and 5.

2. When laying "Indirect" the sequence should be as follows:—

(i) 3 sets the dial sight, deflection scale, and range drum as ordered.

4 takes the difference in level of wheels with the field clinometer placed across the clinometer plane on the breech, and reports the amount of difference in level to 1, who orders the necessary deflection to 3.

4 then sets the field clinometer at the angle of sight ordered, at zero if none has been ordered, and places it on the clinometer plane on the rocking bar sight.

(ii) 4 elevates the gun until the bubble of the field clinometer just runs to the front.

(iii) 3 lays for direction, first elevating or depressing the dial sight on to the aiming point, 2 and 5 traversing as directed by 3.

(iv) 4 depresses the gun until the bubble of the field clinometer is central. He then reports "Set" to 3, who reports "Ready."

An auxiliary aiming point can then be picked up or aiming posts planted in line with the telescope of the No. 1 dial sight set at zero.

**NOTE.**—If both the field and Watkin clinometers are available, 1 will take the difference in level of wheels with the Watkin clinometer, calculate the amount, and order it to 3. The field clinometer will be kept set at the angle of sight.

3. When laying "Direct" the bar and dial sight must be removed and the telescope replaced in the holders or the open sights used.

(i) 3 sets the range drum and deflection scale as ordered.

1 obtains the correction for difference in level of wheels and orders it to 3, who sets it on the deflection scale.

(ii) 3 lays the gun on the target by the pointer of the



telescope or the open sights, 2 and 5 traversing as directed by 3. The last motion of the elevating hand-wheel must be one of depression. He then calls out "Ready."

As soon as 4 has levelled the field clinometer laying can be carried on as for "Indirect."

4. Orders and signals by 1 or 3.

#### Orders.

"Right (or left) dragropes"	...	Trail right (or left) with dragropes.
"Handspikes"	... ..	2 and 5 stand ready to move with trail with handspikes.

#### Meaning.

#### Signals.

Palm of the hand moved in the required direction	... ..	Trail right (or left).
Smart tap of the thigh with the palm of the hand	... ..	Halt.

#### Meaning.

On the command "Ready" from 3, 2 and 5 replace their handspikes, put on the brakes and take post.

NOTE.—As the rate of fire of this equipment wholly depends on quick laying for line the above laying drill is a most important factor in the quick service of the gun, and a mutual understanding between the layer and traversing men is most important. The difficulties that arise owing to the absence of such mutual understanding are not so noticeable when drilling in gun parks and drill halls or on macadamized ground, but are accentuated to a marked degree when the gun is brought into action on ground ordinarily met with in the field.

5. In order to counteract any play that may develop in the sights, the procedure in setting the sights should be as follows:—

When setting the range drum the last motion should be such as to depress the rocking bar, that is, giving extra elevation on the drum.

#### No. 5.

1. He should always be ready to load as soon as he receives the order.

2. He supplies himself with the tube pocket at "Preparation for Action," and straps it round his waist; he places tubes in the adapter, after 2 has closed the breech and opened it again sufficiently for him to do so. To insert the tube he should use the right hand.

3. To load, he steps up to the gun and stands facing the breech on the left of the gun with his feet apart.

When he receives the shell from 7 or 8, he places it in the bore so that the base of the shell is only just clear of the face of the breech.

When 1 has canted the rammer to him, he places the rammer head against the base of the shell and slides his hands towards the end of the stave to the full extent of his arms; right hand nearest the end back down, left hand back up.

He then rams the shell vigorously home in one motion. It is not sufficient to push the shell to its place and then push against its base. When rammed properly home the sound of the driving band meeting the rifling can be heard distinctly. The base of the shell is not to be tapped with the rammer. It is of vital importance that the shell should be properly rammed home. A failure to do so causes irregular shooting, a loss of velocity and unsteadiness in flight.

4. He assists 2 with the spade when necessary. See para. 2—2's duties.

5. See para. 7—2's duties.

6. He fixes a dragrope for traversing, on coming into action. The dragrope should be attached to the trail handle on the double, with the rope extended right and left over the top of the spring case.

\*7. When supplying himself with tubes at "PREPARE FOR ACTION," he should not open more than are likely to be required for immediate use. Tubes are very susceptible to damp and quickly deteriorate.

#### No. 6.

1. He should examine the cartridge boxes at "Preparation for Action," and should see that at least four cartridges are ready for immediate use.

2. He supplies cartridges to 5 in action, handing them to 5 with the base of the cartridge to the left.

3. Empty cartridge cases should be returned to the wagon when opportunity offers; the supply of cartridges being most important he should not delay the loading of the gun by returning empty cases.

4. With the cartridge for the Mark VI gun the igniter of each portion must be to the left when he hands them to 5.

\*5. When using bare charges and short cases for either the Mark IV or Mark VI gun he must examine the short cases carefully before each round to ensure that they are not cracked and that no escape of gas has occurred past the adapter.

6. He must always follow up all orders for corrector and range



on his fuze indicator, so that the shortest possible time may elapse between the order to his gun to load and the calling out of the length of fuze.

7. The length of fuze must be called out loud enough for the section commander to hear, so that he can check the settings.

8. When the range comes between two readings on the fuze indicator, the shorter reading should be called out.

9. When he is not following up on the fuze indicator or setting it he should be preparing cartridges for issue.

10. The rapid supply of ammunition to the gun is most important. It can only be maintained if there is a good mutual understanding between 6, 7 and 8.

#### Nos. 7 and 8.

1. They examine and fuze shell as ordered, and should see that four rounds are ready for immediate use.

2. They should always use the fuze key when setting the No. 80 or 83 T. and P. fuzes, the fuze key should be held in the right hand and the shell with the left.

When using No. 54 or 65 T. and P. fuzes, the cap should be screwed down as tightly as possible, care being taken that the ring and dome have an even seating, and that the setting has not shifted. A fuze insecurely clamped is liable to cause a premature.

3. When firing shrapnel they should always follow up fuzes, so that the least possible delay occurs between the calling out by 6 of the length of fuze and the loading of the round.

4. They supply shell alternately to 5. The shell is brought up, carried in both arms, point to the right, and shown to 1, who removes the safety arrangement, if any.

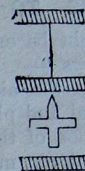
\*5. Care should be taken not to open too many fuze cylinders or to uncap too many capped fuzes at one time, as the fuzes rapidly deteriorate from damp when unprotected.

\*6. The following precautions must be carefully observed when using the No. 100 percussion fuze. The detonator pellet of this fuze is screwed into the side of the screwed portion of the fuze. A section of the head of the fuze, its centre in line with the position of the detonator pellet, is coloured red. When the fuze has been screwed home, should the fixing screw in the head of the shell come within the limits of the red portion of the head of the fuze, it is dangerous to screw home the fixing screw, as it may fire the detonator pellet. The fuze must be unscrewed and tried in another shell. Care must be taken to examine the fuze before fixing it in the shell to see that the detonator pellet does not project above the body of the fuze. If it should do so, the fuze

must be returned, as the action of screwing it in the shell may fire the fuze.

7. When it becomes necessary to replace shell in the ammunition boxes at "Cease firing," they are responsible that no high explosive shell is replaced without the cap on and the pin in when Nos. 17 and 44 D.A. fuzes are used, and that the T. and P. fuzes of shrapnel shell are set at "safety." With No. 1 D.A. fuze the cap must be on.

To set a fuze at "safety," the safety mark on the graduated scale and the vertical line on the setting ring must exactly coincide, thus:—



High explosive shell will not be carried fuzed.

If the order to "Limber up" is received, all fuzes will be removed from high explosive shell and fuze hole plugs replaced.

8. They assist in traversing, when necessary, and in running up by hauling on the dragropes.

9. With G.S. wagons 7 releases the pole chains or straps of the wagon when coming into action, and secures them when hooking in.

#### Nos. 9 and 10.

1. 10, the coverer, is in charge of the firing battery wagon, and is responsible that it always accompanies its gun. When on the move, if a gun has to halt from any cause, its wagon should remain with it when possible, and any damage to the gun should, when possible, be made good from its wagon.

2. To "unhook" the wagon teams on coming into action 9 and 10 must go to the wheel traces, 9 on the off and 10 on the near side. They release the attachments at the swingletree.

3. To "hook in" the above procedure is reversed.

4. When unhooking, the inside traces should be released first, and in hooking in the outside traces should be attached first.

5. They assist in traversing when necessary, and in running up by hauling on the dragropes.

6. They are responsible that the entrenching and cutting tools are brought up, and will, under the orders of 1, clear away any obstacle which may be likely to be in the path of the shell



or in the way of the sights. It must be remembered that, with direct-action fuzes, a twig will be sufficient to set the fuze in action and cause a premature explosion of the shell.

\*7. They fill sandbags to check the recoil of the gun, collect materials for a platform, &c.

\*8. No natural cover which may help to screen the guns or their flashes should be cut except when absolutely unavoidable.

9. They form a reserve for the detachment, and will remain with it, but will keep under cover, except when actually required to assist.

### \*CASUALTIES TO SIGHTS.

*Dial Sight.*—If the dial sight becomes a casualty the line of fire can be obtained as follows:—

For angles up to  $45^{\circ}$  from the aiming point—set the field clinometer to the angle ordered and place it horizontally against the outer side of the top felloe of the left gun wheel.

For right deflection the pivot pin must be to the rear (RIGHT—REAR).

For left deflection the pivot pin must be to the front.

Look along the edge of the slider and direct the gun so that the edge of the slider and aiming point are in line. Aiming posts should now be planted in line with the rocking bar sight set at zero, or an auxiliary aiming point picked up. Deflection for level of wheels must be placed on the rocking bar sight if necessary.

If the angle is from  $45^{\circ}$  to  $135^{\circ}$  the clinometer should be placed on the face of the breech set as follows:—

For angles between  $45^{\circ}$  and  $90^{\circ}$ —Subtract the angle from  $90^{\circ}$  and set the clinometer to the result obtained, the pivot pointing to the side of the aiming point.

For angles between  $90^{\circ}$  and  $135^{\circ}$ —Subtract  $90^{\circ}$  from the angle ordered and set the clinometer to the result obtained, the pivot pointing away from the aiming point.

For angles between  $135^{\circ}$  and  $180^{\circ}$ —Subtract the angle ordered from  $180^{\circ}$ , set the clinometer to the result obtained, and place it horizontally against the outer side of the top felloe of the left gun wheel. Pivot towards muzzle for Right and towards breech for Left.

*Rocking Bar Sight.*—If the rocking bar sight becomes a casualty, set the field clinometer to the quadrant angle and lay the gun by means of the field clinometer placed on the plane of the gun. The quadrant angle to be fired at can be obtained by placing the field clinometer on the plane of one of the other guns. An auxiliary aiming point must be picked up over the dial sight to lay on from round to round.

## GUN DRILL.

The general principles of battery tactics, which vary but little with the different equipments, are laid down in Field Artillery Training.

The following paragraphs give the duties of the detachments at the section commander's orders.

Single detachments should be accustomed to drill as if forming part of a section, and the instructor should therefore always use the orders given for the section commander.

### THE DETACHMENT.

The detachment consists of 10 men. The senior N.C.O. is 1 and is in charge of the sub-section.

The detachment fall in two deep, one pace between ranks, 1 on the right of the front rank, and when at "Detachment Rear" are formed three yards in rear of the muzzle, 1 covering the off wheel.

At "Detachment Front" they are formed with the front rank five yards in front of the lead horses, or without teams in front of the point of the pole.

At drill and manœuvre 1 will be on the left of his gun leaders and the coverer (10) in front of the wagon leaders. When advancing for action, or over rough ground, 1 will be well in front of his sub-section and the coverer (10) in front of the wagon leaders.

### TO TELL OFF.

At the order from the section commander "..... Section—Tell off," 1 numbers himself 1, the right-hand man of the rear rank 2, the right-hand man of the front rank 3, the second from the right of the rear rank 4, his front rank man 5, and so on.

### TO FORM THE ORDER OF MARCH FROM DETACHMENT REAR.

At the order from the section commander "..... Section—Form the Order of March," the detachment turns to the left, wheels to the right, the front rank coming up on the right of the gun, the rear rank on the left of the gun, halting as follows:—10 in line with the point of the pole, 8 and 9 in line with the splinter bar, 6 and 7 in line with the trail eye, 4 and 5 in line with the centre of the trail, covering each other, one yard clear of the gun wheels, 2 and 3 behind the brakes, and 1 in front of the gun.



to their guns until they are in the correct line, when 1 will give the signal "Advance."

7, 9 and 10 immediately unhook.

6 fixes the fuze indicator, and puts on the wagon brake, and with 7 and 8 prepares ammunition.

2 obtains cartridge extractor and lanyard from the limber, and unstraps handspikes on the right side.

3 obtains dial sight and telescope from the limber.

4 obtains clinometer from the limber and brings up a drag-rope.

5 brings up a dragrope from the limber and unstraps the handspikes on the left side.

9 and 10 bring up the entrenching and cutting tools from the limber.

1, 2 and 5 lay down their handspikes, 1 one yard clear of the trail eye, 2 and 5 one yard clear of the trail eye on their own sides, points outwards, bevel up.

The position of the detachment is as follows:—

1 where he can best superintend the working of the detachment.

2 close to the breech on the right side.

3 close to the breech on the left side.

4 outside the left gun wheel, and in line with the elevating handle facing the right.

5 in the rear of 8.

6 in rear of the wagon on the side furthest from the gun.

7 between 6 and 8.

8 in rear of the wagon on the side nearest the gun.

The detachment should kneel when possible.

9 and 10 will remain with the detachment, but will keep under cover except when required to assist.

At standing gun drill they will be formed up on a flank of the battery by the captain.

1 removes the rammer and places it one yard clear of the trail eye on the right.

2 lowers the spade, opens the breech, and places the lanyard round his neck.

3 fixes the dial sight and telescope.

4 and 5 hook the dragropes to the trail handle.

### TO FORM DETACHMENT REAR IN ACTION.

At the order from the section commander "..... Section—Detachment Rear"—1 doubles to his place one yard in rear of the trail eye, and covering the right wheel, and gives the order "No. .... Double March."

At the order from 1—The remainder double to their places by the shortest way and halt.

### TO TAKE POST FROM DETACHMENT REAR IN ACTION.

At the order from the section commander "..... Section—Take Post"—1 orders "No. .... Double March."

At the order from 1—The detachment double to their places by the shortest way and halt.

### TO RUN UP WITH WHEEL PURCHASE.

At the order from 1, "Wheel Purchase, Run Up"—2 and 5 fix the dragropes round the felloe just above the brake blocks, pass the running end round the tyre to the front and take off the brakes. The ropes are manned, and 1 directs the detachment to heave on them as required.

### LAYING FOR DIRECTION WITH HANDSPIKES OR DRAGROPES.

At the order from 1 or 3 "Handspikes," 2 and 5 pick up their handspikes and move the trail as directed by 1 or 3.

At the order from 1 or 3 "Right (or left) Dragrope" the remainder of the detachment man the dragrope as ordered, even numbers on the right side of the rope, the men heave on the rope according to orders or signals given by 1 or 3.

### GENERAL DUTIES IN ACTION.

1 is responsible for the entire service of the gun. He commands, directs the gun approximately in the line of fire, and superintends the moving of the trail. He examines the fuze setting, removes safety pins or caps, and supplies 5 with the rammer. He assists in passing orders down the battery when necessary. He will occasionally examine the setting on the field clinometer, sights, and fuze indicator. He orders the correction, if any, for difference in level of wheels.

2 attends to the breech mechanism, brakes, spade, fires, moves the trail with the handspike on the right side of the gun, and extracts cases.

3 sets the sights, lays for elevation and direction when laying direct, for direction only when laying indirect. He directs 2 and 5 to traverse as required.

4 assists 3 to lay. He sets the field clinometer, takes and reports to 1 the difference in level of wheels, attends to the elevating hand-wheel, and brings the gun to the proper position for loading. This should not exceed five degrees of elevation.



He lays for elevation when laying indirect. When laying direct he levels the field clinometer as soon as possible. He reports "Set" to 3 when his part of the laying is correct. He plants aiming posts when required.

5 loads, rams home, places tubes in the adapter, moves the trail with the handspike on the left side, and assists 2 with the spade.

6 attends to the fuze indicator, calls out the length of the fuze, supplies cartridges to 5, and returns empty cases.

7 and 8 fix and set fuzes, and alternately supply 5 with shell.

9 and 10 assist, when required, in traversing with dragropes and running up.

### TO LOAD.

As fuzes are liable to deteriorate from damp when opened, the battery commander should order at the beginning of a series the nature of projectile he intends to fire, so as to prevent fuzes being opened unnecessarily.

Thus "Lyddite series" when high explosive shell are only to be fired.

"Lyddite and Shrapnel series" when he intends to range with lyddite and afterwards to proceed to fire with time shrapnel.

"Shrapnel series" when only that nature of shell is to be used.

This order will enable section commanders and ammunition numbers to estimate the number and description of fuzes to be opened.

NOTE.—At drill only drill cartridges will be placed in the bore. The rammer will be placed against the breech ring in the action of ramming home. The striker will not be cocked.

On the order from 1, "No. .... Lyddite road," 5 steps up to the breech and stands facing the right.

7 supplies the first shell, point to his right.

1 steps up to 7 and removes the cap and pin from the fuze (D.A. fuzes).

7 hands the shell to 5 and returns to the wagon.

5 receives the shell from 7, point to his left, and places it in the chamber.

1 then cants the rammer to 5. 5 rams the shell hard home, and cants the rammer back to 1, who replaces it.

6 stands ready with a cartridge, base to his left, and as soon as 5 is ready for it he hands the cartridge to him.

5 places it in the chamber and gets ready a tube.

2 closes the breech, opens it sufficiently for 5 to insert a tube in the adapter, then carefully closes the breech and hooks the lanyard to the trigger.

As soon as the breech is closed, 3 and 4 check the lay, 4 reports "Set" to 3, who reports "Ready" when the lay is completed; 2 puts on the brakes.

At the order from 1, "No. .... Corrector," "Range," "Load," 6 sets the fuze indicator as ordered and calls out the length of fuze.

7 and 8 set the fuzes with the fuze key, and supply the shell to 5. 1 steps up and removes the safety pin or pins (depending on the fuze in use) and also checks the setting.

(The remainder of the detail as for loading lyddite.)

When there is no alteration of corrector or range for subsequent rounds 1 will order "Time load."

At the order from 1 .... "Percussion load."

This detail is the same as when loading with lyddite, with the exception that the fuze will be set at safety or the percussion pin only will be removed by 1 (depending on the fuze in use).

### TO FIRE.

A gun is not to be fired without an order from 1, who must never give this order until he sees that the gun is in all respects ready. As soon as the gun is ready, and it is its turn to fire, 1 gives the number of his gun as a caution.

At this caution 2 cocks the striker, picks up the lanyard, steps outside the wheel and faces the breech, holding the lanyard in his right hand; 1, 3, and 4 step clear.

1 then orders "Fire," 2 fires the gun by jerking the lanyard smartly. As soon as the gun is fired:—

2 unhooks the lanyard and places it round his neck, opens the breech and extracts the empty cartridge, 4 brings the gun to the loading position. 3 and 4 relay.

2 takes off the brakes, and with 5 stands ready to traverse.

### RE-LOADING.

As the gun cannot be unloaded, the following points must be attended to as regards re-loading:—

- (a) When ranging guns will ordinarily be re-loaded as soon as fired. The battery commander, however, should give the order for the corrector in sufficient time to ensure that once he has verified the 100 yards bracket the guns do not re-load. This point is important in order to avoid unnecessary waste of ammunition and delay.
- (b) When a change of fuze has become necessary either by change in range or corrector, the battery commander should be informed by the section commander concerned when the first gun fires with the new fuze.